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A R M S T R O N G   L A B O R A T O R Y

THE DEVELOPMENT OF THE ARMSTRONG LABORATORY AVIATION PERSONALITY SURVEY (ALAPS)

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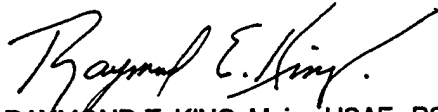19960926 105   DTIC QUALITY INSPECTED 8

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The Office of Public Affairs has reviewed this technical report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This technical report has been reviewed and is approved for publication.

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This work describes the development of a new psychological test for aviators. The Armstrong Laboratory Aviation Personality Survey (ALPS) was developed through the integration of clinical theory, psychometric methods, and empirical testing. Using a sample of 200 student pilots, a thorough test development plan was accomplished. The 15 final test scales cover personality, psychopathology, and crew interaction styles. The scales have normative data and are demonstrated to be reliable and valid. Additional validity work is suggested to further improve the test.

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PREFACE

SUMMARY

The Development of the Armstrong Laboratory
Aviation Personality Survey (ALAPS).

This work describes the development of a new psychological test for aviators. The Armstrong Laboratory Aviation Personality Survey (ALAPS) was developed through the integration of clinical theory, psychometric methods, and empirical testing. Using a sample of 200 student pilots, a thorough test development plan was accomplished. The 15 final test scales cover personality, psychopathology, and crew interaction styles. The scales have normative data and are demonstrated to be reliable and valid. Additional validity work is suggested to further improve the test.

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The Development of the Armstrong Laboratory
Aviation Personality Survey (ALAPS).

The accurate assessment of aviation personnel requires specialized and optimized devices. This is particularly true in the area of psychological assessment (Damos, 1996; Johnston, 1996; Goeters, Timmermann, and Maschke, 1993).

The psychological assessment of pilots through testing has a long history with many valuable contributions (Hormann & Maschke, 1996; Dolgin & Gibb, 1988; Picano, 1991; Retzlaff & Gibertini, 1987; Retzlaff and Gibertini, 1988; Siem, 1992). Traditional psychological tests, however, are of less than optimal value when applied to the assessment of aviator's personality, psychopathology, and interpersonal interaction. Tests developed for use with psychiatric patients (e.g. Millon, 1983; Millon, 1987) often offend high functioning individuals (King, 1994; Flynn, Sipes, Grosenbach, & Ellsworth, 1994). The dimensions and scales often have little to do with the referral questions. Further, the psychometrics of the instruments are often unknown when used with populations different from the intended (Gibertini, Brandenburg, & Retzlaff, 1986; Rourke, Costa, Cicchetti, Adams, & Plasterk, 1991; Franzen, 1989).

There are few specialized tests used for pilot and astronaut selection. They, however, are not published and hence tend to be obscure. Often they have no standardized administration form, manual, or psychometric data. Tests must have established norms, reliabilities, and validities in order to be properly evaluated.

The purpose of the Armstrong Laboratory Aviation Personality Survey (ALAPS) is to provide an inventory with appropriate scales, established norms, high reliability, and solid validities for the aviation industry.

ALAPS Description

Format   The ALAPS is a 240 item test. The subject is requested to respond in a "true" or "false" manner as each item applies to the subject. The test usually takes between 20 and 30 minutes to complete. The test may be used in paper-and-pencil format or by computer administration.

There are 16 items keyed to each scale. All items are "unique" to a scale and as such no items are keyed to more than one scale.

Scales   There are 15 scales divided into personality, psychopathology, and crew interaction categories. The Personality scales include Confidence, Socialness, Aggressiveness, Orderliness, and Negativity. The Psychopathology scales include Affective Lability, Anxiety, Depression, and Alcohol Abuse. Finally, the Crew Interaction scales include

Dogmatism, Deference, Team Oriented, Organization, Impulsivity, and Risk Taking.

Personality Scales:

CONFIDENCE: High scorers view themselves as highly capable, intelligent, and talented. This can include the negative elements of arrogance, manipulation, and condescension. Clinically these traits may suggest narcissism.

SOCIALNESS: High scorers are extremely social and outgoing. They enjoy others and are socially comfortable. They see themselves as friendly and charming. Clinically this may include elements of histrionic personality.

AGGRESSIVENESS: High scorers are assertive to the point of being aggressive. They take strong stands and tolerate little criticism. They are verbally and emotionally combative. This quality probably does not rise to the level of antisocial personality.

ORDERLINESS: High scorers are orderly in a behavioral and environmental way. Their lives are structured and neat. They are methodical and disciplined. This may clinically rise to the level of compulsive personality disorder.

NEGATIVITY: High scorers are angry, negative, and cynical. They are socially punitive and not pleasant to be around. Clinically this may rise to the level of negativistic or passive-aggressive personality.

Psychopathology Scales:

AFFECTIVE LABILITY: High scorers are generally emotional and reactive. They can be situationally anxious, depressed, and frightened. Moods are seen as changing quickly with little provocation. Affect is volatile.

ANXIETY: High scorers are chronically anxious. They worry and brood. The anxiety interferes with their lives and occupational functioning.

DEPRESSION: High scorers are depressed. Problems include dysphoric affect as well as the cognitive and vegetative symptoms of depression. They report being pessimistic, unhappy, and guilty. Extreme elevations may include clinical major depression.

ALCOHOL ABUSE: High scorers like to drink, drink a great deal, and get intoxicated. Functioning is impaired and there may be social and occupational problems.

Crew Interaction scales:

DOGMATISM: High scorers believe what they believe is always correct and are not open to change. They are authoritarian interpersonally. They are intolerant of other people, ideas, and actions.

DEFERENCE: High scorers are deferent to a fault. They are submissive and quiet. They concentrate on their job and are uncomfortable questioning the status quo.

TEAM ORIENTED: High scorers enjoy and believe in team work. They value the team effort and team rewards. They do not enjoy working alone and may be inefficient when working alone.

ORGANIZATION: High scorers are systematic and organized. They coordinate and plan all elements of a project. They think things through thoroughly.

IMPULSIVITY: High scorers act first and think second. They often act and talk without sufficient forethought. They see themselves as spontaneous. Others may be less generous in their assessment.

RISK TAKING: High scorers enjoy danger and risk. New activities and situations are not frightening. They are adventurous, unafraid, and fun-loving. They are not necessarily impulsive about their activities; their actions may be calculated and include a rational appreciation of the inherent danger.

Construction Plan

The ALAPS was developed using the domain theory test construction model (Nunnally, 1978). This model uses most other construction approaches in a systematic and integrative manner. It includes, in appropriate order, clinical content development, internal statistical homogeneity item selection, and, finally, validity estimate establishment.

Content is the first element of domain theory test construction. Here the domains (scales) of interest are generated by examining the literature, interviewing experts, and analyzing referral questions. After the domains are fixed, items are written that are "face valid" and saturate the domain of interest. More items than expected in the final form are generated in order to eliminate internally inconsistent items. Items are reviewed by expert judges to ensure widespread support of the content. Finally, subjects review the items for objectionable content. All items are written simply and in a straightforward manner. Double negatives and awkward grammar are avoided.

Internal consistency is developed through the elimination of items that do not correlate with the item pool as a whole. In order to accomplish this goal, an initial form of the test is

given to a large and representative sample of subjects. Within each scale, each item is correlated with the total score for that scale. Items with low item-total correlations are eliminated. In essence, the item pool is statistically "cleansed". This active process of making the item pool homogeneous results in high final scale reliabilities (internal consistencies).

Empirical validation is the final step. Here the final internally consistent and content-rich scales are given to a sample along with some other test of similar content. High, appropriate, and logical correlations suggest construct validity of the new scales (Campbell & Fiske, 1959; Suen, 1990).

Scale and Item Development

Domain development was accomplished as planned. Eight psychologists and psychiatrists familiar with aviation evaluation issues reviewed the literature, currently used tests, other available tests, diagnostic manuals (American Psychiatric Association, 1994), and referral questions in order to develop an initial relatively exhaustive (and unwieldy) list of domains of interest. From that point, dimensions were eliminated, collapsed, and added with an eye toward a target of about 20 scales. This number was agreed upon given the probable number of items per scale and the desirability of a short, easy to administer test. Finally, a list of 18 scales was set. It included all of those described above plus Somatization, Communication Openness, and Achievement.

Item writing proceeded in an iterative fashion with items being written and edited until a consensus was reached that items were readable, applicable, and straightforward. It was determined that 24 initial items per scale would allow for a final 16 per scale that were internally consistent.

Item elimination started with the administration of the test to an initial sample of 86 male and female college undergraduates. This was done to "pre-test" the items. It was found that about 10% of the items had no variance or had poor item-total correlation. This allowed for the elimination of the very poorest items prior to the use of actual Air Force subjects. Eliminated items were replaced with new (and "improved") items.

Following this pre-testing, the initial form of the test with 432 items (18 scales with 24 items per scale) was administered to 200 US Air Force pilot students as part of a larger medical screening procedure (King & Flynn, 1995). The subjects included Air Force Academy, Reserve Officer Training Corps, Officer Training School, and National Guard officers and candidates. Only about 8% were female. The vast majority of subjects were in their 20's.

Item variance was the first level of analysis. In general, items were eliminated when fewer than 5% or more than 95% of the subjects answered "true".

Item-total correlations were examined next. Each subject's answers were converted to a "1" if endorsed in the keyed direction and a "0" if endorsed in the non-keyed direction. These items were then correlated with the total score for the 24 items of each scale. Items with negative, non-significant, or low correlations were eliminated.

Items were also correlated with the total scores for all other scales. In general, items that correlated with other scales higher than their own scale were eliminated.

Item-factor loadings were also done. Here a single factor was extracted and item-loadings were examined. While these loadings paralleled the item-total correlations in most cases, some differences were found due to the limited variance of some of the psychopathology scales. Optimum item-total and item-factor items were retained.

Some scales did not survive the item selection and reliability stages of construction. Somatoform, Communication Openness, and Achievement scales were eliminated when item statistics and initial reliabilities failed to reach acceptable levels. Only scales with internal consistencies above .70 were retained.

The outcome of these procedures (see Appendix A) included 15 scales each with 16 items. About 20% of the items are "False" keyed with "False" responses adding 1 point to the score. These 240 items were placed in a final form (see Appendix B) that rotated presentation of the items across scales. The first 15 items are the first item from each of the 15 scales in order of scale name. The second 15 items in the final format were the second items in each scale. And so on. The final form appears easy to administer and lends itself to easy hand scoring.

Norming

Table 1 provides the means, standard deviations, and ranges for each of the 15 ALAPS scales. These data are from the 200 student pilots in the construction sample. As can be seen, most means are relatively in the middle of the ranges. The notable exceptions are the clinical scales such as Anxiety and Depression. While these traits are relatively uncommon in the population, there were subjects who endorsed most, if not all, of the items given the range statistics. Additionally, the standard deviations show reasonable distribution of scores and resolution of the sample.

Percentile transformations are provided in Table 2. Percentile within the normative sample may be found by crossing the scale name row with the raw score column. For example, a subject with a raw score of 3 on the Confidence scale would be at the 2nd percentile of the normative sample. This subject would probably have a problem with confidence. A subject with a raw

score of 15 on the Alcohol Abuse scale would be in the top 99th percent of the sample. This subject would be exhibiting a very high level of alcohol use and be of great clinical concern.

Reliability

Internal consistencies are presented in Table 3. Here Cronbach alpha's have been calculated for each scale. In general, it is necessary to have internal consistencies at least in the .70's and preferably in the .80's (Nunnally, 1978). None are below .70 and 9 of the 15 scales are .80 or above. Of interest is the fact that the Alcohol Abuse scale has the highest internal consistency coefficient with a .89. This result is remarkable given the concern that subjects would be very wary of alcohol related items.

Item-total correlation ranges are presented in Table 4 and by item in Appendix A. These show the statistical quality of the items going into the scales and driving the internal consistency reliabilities. Again, the strongest numbers are seen for the Alcohol Abuse scale. The lowest item-total are found on Confidence and Team Oriented. Again, during the selection of items for the final scales, items with lower item-total correlations were eliminated.

Internal Construct Validity

Table 5 provides the first validity analysis. This univariate intercorrelation matrix of the 15 scales indicates the degree of scale co-variance and overlap. It is desirable to have scales with relatively low intercorrelations to ensure scale specificity. Scales with higher correlations should be theoretically similar in content.

Across the matrix it is apparent that there is not undue scale overlap. Scales are relatively specific. Scales that are correlated are of similar content vein. For example, Confidence, Socialness, and Aggressiveness are all moderately correlated. This result is logical as social people are usually confident and assertive. The highest correlation in the matrix is between Orderliness and Organization. Again, this is appropriate in that those two dimensions are similar. Orderly individuals tend also to be organized. The .74 correlation for these two scales, however, is probably higher than is desirable.

Table 6 is a principal components analysis of the 15 ALAPS scales. This is done to determine the underlying dimensionality of the scales. The eigenvalues relatively cleanly suggest a four factor solution. The first factor encompasses the shared variance in the Confidence, Aggressiveness, and Risk Taking scales. The second factor appears to be an affective factor with Negativity, Affective Lability, Anxiety, and Depression loading highly. The third factor includes the highly correlated Orderliness and Organization scales. Finally, the fourth factor is a social factor with Socialness and Team Oriented scales. In

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general, this is a very interpretable underlying factor structure. This and the univariate correlations suggest the ALAPS scales are internally valid.

External Construct Validity

The construction sample of the ALAPS also were administered the NEO-PI-R (Costa & McCrae, 1992). Table 7 provides the descriptive data for the NEO-PI-R. The data appears to be well behaved in this population. Indeed the internal consistency statistics are higher for this type of sample than those found in the NEO-PI-R manual. Correlations between the ALAPS scales and the five main NEO-PI-R scales are found in Table 8. The first NEO-PI-R scale, Neuroticism, is correlated with the affect oriented ALAPS scales, Negativity, Affective Lability, Anxiety, and Depression. The Extraversion scale is correlated with the ALAPS Socialness scale at a very high level. The Openness NEO-PI-R scale is somewhat more difficult to interpret and, interestingly, has no high correlations with ALAPS scales. The Agreeableness scale negatively correlates with the ALAPS Aggressiveness scale. Finally, the Conscientiousness scale correlates highest with the Organization scale and negatively with the Impulsivity scale. In general, these correlations are logical and of appropriate magnitude. These data support the external construct validity of the ALAPS scales.

Tables 9 through 13 provide the correlations between the ALAPS scales and the 30 subscales of the NEO-PI-R. Each of the 5 main NEO-PI-R scales have 6 subscales of similar but more focal content. These correlations provide a more narrow analysis of the construct validity of the ALAPS scales. In Table 9, it should be noted that the highest correlation with the NEO-PI-R Anxiety scale is with the ALAPS Anxiety scale. The highest correlation with Angry is with Negativity. The highest correlation with the NEO-PI-R Depression scale is with the ALAPS Depression scale. The NEO-PI-R Self-Conscious scale has no peer on the ALAPS. The Impulsive scale, again, has the highest correlation with the ALAPS Impulsiveness scale. Vulnerable has no complement in the ALAPS. All of these tables also include the relevant NEO-PI-R intercorrelation matrix which allows for an understanding of the specificity of the NEO-PI-R scales.

Similar convergence can be seen in the other tables whenever scales have similar names. For example, in Table 13 the NEO-PI-R Order scale correlates highest with the ALAPS Order scale. Indeed, the correlation here is .69 which is typical of these convergent validities and very strong. Again, construct validity for most of the ALAPS scales is seen.

As a multivariate approach to the external construct validity, a principal components analysis was done using the five main NEO-PI-R scales and the ALAPS scales. Table 14 shows the five factor solution. Factor One nicely encompasses the neurotic and affective elements of the two tests. Factor Two is an aggressive dimension with negative loadings for the NEO-PI-R

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Agreeableness scale and positive for the ALAPS Confidence and
Aggressive scales. Factor Three includes the NEO-PI-R
Conscientiousness scale as well as the ALAPS Orderliness and
Organization scales. Factor Four is anchored by the NEO-PI-R
Openness scale and has positive loadings with the ALAPS Risk
Taking scale and negative with the ALAPS Deference scale.
Finally, the fifth factor has the Extraversion NEO-PI-R scale and
higher loadings from the ALAPS Socialness and Team Oriented
scales. In summary, this is a remarkably clean factor solution
and supportive of the ALAPS dimensions.

In summary, the psychometrics of the ALAPS are very strong.
The scales are highly internally consistent and as such highly
reliable. The initial validity extimates against the NEO-PI-R
are high and appropriate. The construction of the test has been
rigorous and the statistics are highly supportive of its utility.

Future Research

At least two additional subject samples are necessary
for this project. The first needs to be a cross-validation
sample using Air Force student pilots. This sample is currently
being collected. Norms, reliabilities, and validities must be
re-calculated to ensure generalization of the current data.

The second additional sample must be a group of mid-
career Air Force pilots. In order to use this test with the most
confidence, a normative sample of fully qualified (rated) pilots
is necessary. The easiest way to collect those data would be to
work with Squadron Officer School (SOS) and collect the data
there.

Additional samples of interest would include college
students to determine the universality of these scales.
Additionally, a group of ROTC students would show very early
selection issues.

Additional construct validity studies are necessary. The
use of the NEO-PI-R as the single external validity mechanism is
adequate but less than compelling. Additional, studies using
other tests such as the Jackson Personality Inventory-Revised
(Jackson, 1994) and Personality Research Form (Jackson, 1984)
would be instructive. Further, "real world" peer rating or
commander ratings would add evidence of validity. An easy
project would be to have the Instructor Pilots in the USAF
Enhanced Flight Screening program rate the student pilot
subjects.

Test taking/ response style studies would shed light on the
problem of minimizing symptoms by ALAPS subjects. It is highly
likely that in a number of situations pilots might take the ALAPS
wishing to appear "perfect" and without flaw. This tendency is
known as "impression management". Such a "fake good" style would
impact the interpretability of the test for that subject. A
group of college students could be used to take the test under a

number of simulated situations. Regression formulae could be developed to predict the style of pilot taking the ALAPS. Additionally, work should be done to model random response patterns. Some subjects may simply answer the test without reading the items. This end could be accomplished through the correlation of scale halves.

Selection, training, and occupational outcome studies are obviously of great interest in the military. Here prospective prediction of EFS, initial pilot training (SUPT), and advanced training would all be important. It may also be found that the crew interactions scales predict airframe success with team oriented personnel doing best in multicrew aircraft and confident, independent types doing best in single seat aircraft.

Finally, clinical studies will improve the mental health care of pilots. ALAPS scales may be useful in the diagnosis of manifestations of anxiety (MOA) in flight training. Mid-career pilots my have difficulty with depression or alcohol use. It may be useful even in marital or family therapy settings.

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Table 1

ALAPS Norms

Scale	MEAN	SD	Range
PERSONALITY (BEHAVIORAL STYLES)			
CONFIDENCE	9.7900	2.9238	2-16
SOCIALNESS	12.9050	3.3319	1-16
AGGRESSIVENESS	9.3450	2.8875	1-16
ORDERLINESS	12.4500	3.2512	0-16
NEGATIVITY	5.2700	3.0633	0-15
PSYCHOPATHOLOGY (COPING STYLES)			
AFFECTIVE LABILITY	5.0900	3.8452	0-16
ANXIETY	2.2400	3.0445	0-16
DEPRESSION	1.3300	1.9208	0-14
ALCOHOL ABUSE	7.2100	4.3231	0-16
CREW INTERACTION (INTERPERSONAL STYLES)			
DOGMATISM	5.9300	2.9782	0-14
DEFERENCE	6.3750	3.0841	0-15
TEAM ORIENTED	12.4000	3.4613	2-16
ORGANIZATION	12.8400	3.1582	0-16
IMPULSIVITY	7.0750	3.6956	0-16
RISK TAKING	12.0350	3.1565	2-16

note: N=200.

Table 2

ALAPS Percentile Conversion Table

Scale	Raw Score 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CONFID	<	<	1	2	5	9	12	21	33	44	57	70	84	90	95	99	>
SOCIAL	<	1	2	3	5	6	7	10	12	14	18	22	30	43	60	82	>
AGGRES	<	1	2	3	5	9	16	24	37	53	68	77	86	92	97	99	>
ORDERC	<	<	1	3	5	6	7	8	10	17	22	29	39	51	68	91	>
NEGATI	4	9	20	30	43	57	72	79	86	90	94	96	98	99	>	>	>
AFFECT	5	19	33	43	53	64	70	74	77	85	90	93	95	97	98	99	>
ANXIET	42	58	69	77	81	85	88	92	93	97	98	99	>	>	>	>	>
DEPRES	44	69	83	90	94	96	98	99	>	>	>	>	>	>	>	>	>
ALCOHO	9	15	19	24	28	35	44	50	58	67	73	80	88	95	98	99	>
DOGMAT	2	7	13	20	32	47	63	71	82	91	93	95	97	99	>	>	>
DEFERE	1	4	8	18	30	44	56	68	77	85	91	93	95	97	99	>	>
TEAMOR	<	<	1	2	4	6	10	11	16	20	23	33	39	52	66	80	>
ORGANI	<	<	1	3	4	5	6	7	10	14	20	25	33	45	62	84	>
IMPULS	2	6	9	19	29	37	49	57	63	72	80	88	93	95	98	99	>
RISKTA	<	<	1	2	5	6	8	10	14	19	23	35	46	62	78	91	>

Table 3

ALAPS Scale Internal Consistencies (Reliabilities).

Scale	Alpha
CONFID	.71
SOCIAL	.85
AGGRES	.73
ORDERC	.83
NEGATI	.74
AFFECT	.85
ANXIET	.86
DEPRES	.76
ALCOHO	.89
DOGMAT	.73
DEFERE	.75
TEAMOR	.84
ORGANI	.83
IMPULS	.82
RISKTA	.80

Note: Alpha is a Cronbach Alpha internal
consistency (reliability) statistic.

Table 4

Item-Total Correlation Coefficient Ranges.

Scale	Coefficient Range
CONFID	.27- .53
SOCIAL	.36- .76
AGGRES	.30- .58
ORDERC	.30- .70
NEGATI	.30- .62
AFFECT	.34- .74
ANXIET	.47- .73
DEPRES	.29- .62
ALCOHO	.48- .79
DOGMAT	.36- .55
DEFERE	.32- .59
TEAMOR	.27- .75
ORGANI	.35- .64
IMPULS	.38- .66
RISKTA	.33- .63

Table 5

ALAPS Intercorrelation Matrix

	CON	SOC	AGG	ORD	NEG	AFF	ANX	DEP	ALC	DOG	DEF	TEA	ORG	IMP	RIS
CONFID	-														
SOCIAL	43	-													
AGGRES	52	37	-												
ORDERC	-01	-01	-00	-											
NEGATI	-00	-11	30	02	-										
AFFECT	-24	03	04	-06	44	-									
ANXIET	-30	-13	-06	10	35	51	-								
DEPRES	-40	-35	-10	-00	43	47	48	-							
ALCOHO	19	25	24	-12	17	13	10	-03	-						
DOGMAT	20	08	28	09	44	15	20	19	14	-					
DEFERE	-30	-34	-27	18	14	02	24	27	-17	13	-				
TEAMOR	-01	40	02	-01	-20	00	-10	-09	07	-17	-20	-			
ORGANI	10	00	06	74	-09	-19	-03	-21	-19	-05	02	02	-		
IMPULS	18	23	26	-26	26	42	11	14	32	19	-15	-00	-35	-	
RISKTA	33	26	32	-16	11	10	-14	-08	25	14	-29	02	-08	49	-

Note: Decimals omitted.

Table 6

ALAPS Factor Structure

Rotated Factor Loadings

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	H2
CONFID	0.722	-0.436	0.100	-0.050	0.724
SOCIAL	0.559	-0.111	0.079	0.588	0.676
AGGRES	0.776	-0.023	0.128	-0.036	0.620
ORDERC	-0.051	0.094	0.898	-0.018	0.817
NEGATI	0.362	0.606	0.034	-0.401	0.660
AFFECT	0.123	0.809	-0.154	0.140	0.712
ANXIET	-0.089	0.779	0.108	-0.055	0.629
DEPRES	-0.192	0.748	-0.117	-0.226	0.661
ALCOHO	0.477	0.178	-0.186	0.174	0.323
DOGMAT	0.486	0.299	0.142	-0.445	0.544
DEFERE	-0.386	0.262	0.170	-0.450	0.448
TEAMOR	-0.001	0.037	0.068	0.814	0.668
ORGANI	-0.022	-0.144	0.889	0.052	0.814
IMPULS	0.545	0.345	-0.433	0.086	0.611
RISKTA	0.628	-0.028	-0.235	0.076	0.456
Accounted for					
Variance	2.936	2.731	2.010	1.693	9.370
%	20	18	13	11	62

Note: H2 are the communalities which are the sum of the squared loadings for each variable. This statistic summarizes the quality of the solution's "fit" for each variable. For the purpose of scree analysis, the first 6 Eigenvalues are 3.123, 3.011, 1.888, 1.347, 0.894, and 0.793.

Table 7

NEO-PI-R Descriptive Statistics

Scale	Mean	SD	Range	Alpha
N Neuroticism	68.41	18.83	16 - 133	.91
E Extraversion	128.20	16.67	88 - 171	.90
O Openness	114.78	18.22	58 - 163	.88
A Agreeableness	113.98	16.66	68 - 159	.90
C Conscientiousnes	132.33	17.73	79 - 182	.92
N1 Anxiety	12.49	4.61	0 - 24	.77
N2 Angry Hostility	11.81	4.67	2 - 26	.76
N3 Depression	9.88	4.15	0 - 25	.79
N4 Self-Consciousness	12.92	4.41	0 - 25	.70
N5 Impulsivity	14.73	4.60	4 - 25	.72
N6 Vulnerability	6.57	3.49	0 - 19	.78
E1 Warmth	23.19	4.01	12 - 32	.76
E2 Gregariousness	19.35	4.81	5 - 30	.79
E3 Assertiveness	20.10	4.18	9 - 32	.77
E4 Activity	20.99	3.74	11 - 30	.62
E5 Excitement-Seeking	22.57	3.60	12 - 32	.63
E6 Positive Emotions	21.99	4.08	10 - 32	.76
O1 Fantasy	18.41	4.82	5 - 30	.81
O2 Aesthetics	16.77	5.55	1 - 29	.83
O3 Feelings	21.02	4.39	8 - 32	.74
O4 Actions	16.97	4.23	5 - 29	.61
O5 Ideas	22.33	4.65	5 - 32	.82
O6 Values	19.26	4.75	5 - 29	.72
A1 Trust	20.74	4.42	5 - 32	.84
A2 Straightforwardness	18.92	4.47	3 - 29	.72
A3 Altruism	23.49	3.68	11 - 32	.75
A4 Compliance	16.68	3.79	3 - 27	.66
A5 Modesty	16.23	4.67	2 - 29	.77
A6 Tender-Mindedness	17.90	4.00	5 - 28	.65
C1 Competence	24.60	3.32	15 - 32	.72
C2 Order	19.47	4.30	8 - 30	.75
C3 Dutifulness	24.13	3.68	12 - 32	.66
C4 Achievement Striving	23.59	3.75	12 - 32	.79
C5 Self-Discipline	22.75	4.32	11 - 32	.80
C6 Deliberation	17.79	4.35	6 - 30	.72

Note: Alpha is a Cronbach Alpha internal consistency (reliability) statistic. It is based on a sample of 1163 AF student pilots.

Table 8

Correlations Between ALAPS and NEO-PI-R Summary Scales.

	N Neuroticism	E Extraversion	O Openness	A Agreeableness	C Conscientiousness
CONFID	-0.3388	0.4762	0.0602	-0.4640	0.1765
SOCIAL	-0.2019	0.7102	0.2431	-0.1128	0.1045
AGGRES	-0.0318	0.3322	0.0490	-0.5423	0.0874
ORDERC	0.0565	-0.0645	-0.3252	0.0550	0.4264
NEGATI	0.5804	-0.1187	-0.0612	-0.4230	-0.1897
AFFECT	0.6124	0.0515	0.2211	-0.0234	-0.3434
ANXIET	0.5830	-0.1107	-0.1102	0.0082	-0.1081
DEPRES	0.5788	-0.3304	-0.0577	-0.0087	-0.3756
ALCOHO	0.1702	0.2035	0.1288	-0.3212	-0.1605
DOGMAT	0.2686	0.1442	-0.2593	-0.3992	-0.0431
DEFERE	0.2400	-0.3948	-0.3659	0.1380	-0.0843
TEAMOR	-0.0572	0.2864	0.1149	0.1431	0.0633
ORGANI	-0.1573	0.0087	-0.2307	0.0280	0.6053
IMPULS	0.3338	0.2179	0.2380	-0.2015	-0.5466
RISKTA	-0.0378	0.3495	0.2302	-0.2527	-0.1172
N	1.0000	-0.3226	-0.1428	-0.1853	-0.5253
E	-0.3226	1.0000	0.3612	-0.0644	0.2994
O	-0.1428	0.3612	1.0000	0.0407	-0.0735
A	-0.1853	-0.0644	0.0407	1.0000	0.1035
C	-0.5253	0.2994	-0.0735	0.1035	1.0000

Table 9

Correlations between ALAPS and NEO-PI-R Neuroticism Facet Scales.

	N1 Anxiety	N2 Angry	N3 Depression	N4 Self-Consc	N5 Impulsive	N6 Vulnerable
CONFID	-0.3468	-0.0228	-0.3638	-0.4221	0.0528	-0.4432
SOCIAL	-0.1170	-0.0089	-0.2925	-0.2877	0.0442	-0.2698
AGGRES	-0.0762	0.2871	-0.1010	-0.2523	0.0762	-0.1169
ORDERC	0.1149	0.1118	-0.0237	0.1122	-0.1254	0.0554
NEGATI	0.4438	0.6177	0.4730	0.2775	0.3488	0.3451
AFFECT	0.4591	0.4236	0.5452	0.3334	0.4405	0.4794
ANXIET	0.6133	0.3828	0.4498	0.3677	0.3246	0.3952
DEPRES	0.4661	0.2902	0.5505	0.4639	0.3315	0.4404
ALCOHO	0.1155	0.1606	0.0162	-0.0157	0.3803	0.0495
DOGMAT	0.1844	0.4091	0.1302	0.1109	0.2693	0.0078
DEFERE	0.2244	0.0782	0.2326	0.2504	0.0478	0.2378
TEAMOR	0.0361	-0.0513	-0.0879	-0.0561	-0.0710	-0.0184
ORGANI	-0.0940	0.0275	-0.1279	-0.1167	-0.2973	-0.0695
IMPULS	0.1081	0.2268	0.1928	0.1388	0.5316	0.2485
RISKTA	-0.1386	0.0182	-0.0649	-0.1344	0.2194	-0.0875
N1	1.0000	0.4426	0.5772	0.4285	0.3575	0.5423
N2	0.4426	1.0000	0.4445	0.3514	0.3581	0.3652
N3	0.5772	0.4445	1.0000	0.5625	0.3544	0.5956
N4	0.4285	0.3514	0.5625	1.0000	0.3263	0.5143
N5	0.3575	0.3581	0.3544	0.3263	1.0000	0.3325
N6	0.5423	0.3652	0.5956	0.5143	0.3325	1.0000

Table 10

Correlations between ALAPS and NEO-PI-R Extraversion Facet Scales.

	E1 Warmth	E2 Gregarious	E3 Assertive	E4 Activity	E5 Excitement	E6 Positive
CONFID	0.0561	0.2693	0.5761	0.4725	0.3324	0.2535
SOCIAL	0.5544	0.6630	0.5303	0.3065	0.3719	0.4188
AGGRES	-0.0076	0.2344	0.5187	0.3541	0.2246	0.0321
ORDERC	-0.0633	-0.0496	0.0729	0.0198	-0.1608	-0.0938
NEGATI	-0.2618	-0.0902	-0.0324	0.0366	0.0601	-0.1744
AFFECT	0.0847	0.1345	-0.1385	-0.0578	0.0814	0.0916
ANXIET	-0.0416	-0.0503	-0.1631	-0.0209	-0.0843	-0.0909
DEPRES	-0.2218	-0.1472	-0.3865	-0.2934	-0.1143	-0.1909
ALCOHO	-0.0180	0.2764	0.1572	0.0113	0.2548	0.1263
DOGMAT	0.0020	0.0402	0.1311	0.1660	0.2273	0.0517
DEFERE	-0.2037	-0.3431	-0.4095	-0.2987	-0.1484	-0.1819
TEAMOR	0.2834	0.5430	0.1496	-0.0706	0.0532	0.1146
ORGANI	-0.0268	-0.0330	0.1862	0.0992	-0.0868	-0.1046
IMPULS	0.0711	0.2159	0.0586	0.0933	0.2745	0.1773
RISKTA	0.0612	0.1773	0.2140	0.3517	0.4752	0.1959
E1	1.0000	0.4825	0.3055	0.1902	0.3142	0.5295
E2	0.4825	1.0000	0.3916	0.2109	0.4114	0.3859
E3	0.3055	0.3916	1.0000	0.5450	0.2985	0.2634
E4	0.1902	0.2109	0.5450	1.0000	0.2991	0.2615
E5	0.3142	0.4114	0.2985	0.2991	1.0000	0.4139
E6	0.5295	0.3859	0.2634	0.2615	0.4139	1.0000

Table 11

Correlations between ALAPS and NEO-PI-R Openness Facet Scales.

	O1 Fantasy	O2 Aesthetics	O3 Feelings	O4 Actions	O5 Ideas	O6 Values
CONFID	0.0422	-0.1746	0.0933	0.1131	0.2079	0.0011
SOCIAL	0.2154	0.0545	0.3502	0.1475	0.1747	0.0229
AGGRES	0.0308	-0.1348	0.1415	0.0483	0.0848	0.0570
ORDERC	-0.2792	-0.1927	-0.1760	-0.2135	-0.1378	-0.2501
NEGATI	0.0784	-0.1337	0.1816	-0.0962	-0.1234	-0.1192
AFFECT	0.2445	0.2284	0.5302	-0.0569	-0.0466	-0.0615
ANXIET	-0.0356	-0.0826	0.0946	-0.1385	-0.1475	-0.1093
DEPRES	0.0670	0.0178	0.0254	-0.1816	-0.0934	-0.0801
ALCOHO	0.1517	-0.0058	0.1549	0.0263	0.0492	0.1318
DOGMAT	0.0839	-0.3086	0.0646	-0.2807	-0.1027	-0.4273
DEFERE	-0.1770	-0.1575	-0.2906	-0.3482	-0.2832	-0.1824
TEAMOR	0.0327	0.0849	0.1488	0.0621	0.0112	0.1038
ORGANI	-0.2608	-0.1741	-0.1770	-0.1043	-0.0507	-0.1097
IMPULS	0.3083	0.0870	0.3016	0.1387	-0.0158	0.1108
RISKTA	0.2644	0.1062	0.1487	0.2032	0.1165	0.0573
O1	1.0000	0.3829	0.4264	0.2514	0.2898	0.1495
O2	0.3829	1.0000	0.4348	0.3485	0.4181	0.2428
O3	0.4264	0.4348	1.0000	0.1647	0.2682	0.1397
O4	0.2514	0.3485	0.1647	1.0000	0.3172	0.2695
O5	0.2898	0.4181	0.2682	0.3172	1.0000	0.2066
O6	0.1495	0.2428	0.1397	0.2695	0.2066	1.0000

Table 12

Correlations between ALAPS and NEO-PI-R Agreeable Facet Scales.

	A1 Trust	A2 Straightforward	A3 Altruism	A4 Compliance	A5 Modesty	A6 Tender
CONFID	-0.1025	-0.4302	-0.2203	-0.4400	-0.4858	-0.1507
SOCIAL	0.1068	-0.2121	0.1766	-0.2085	-0.2504	-0.0229
AGGRES	-0.2838	-0.4557	-0.2764	-0.6129	-0.3667	-0.1715
ORDERC	-0.0933	0.1522	0.0384	0.0566	0.0774	-0.0176
NEGATI	-0.5085	-0.2536	-0.3137	-0.3855	-0.1180	-0.1241
AFFECT	-0.1886	-0.0233	0.0337	-0.0201	0.0575	0.0577
ANXIET	-0.1346	0.0655	-0.0218	-0.0090	0.0822	0.0423
DEPRES	-0.2089	0.0543	-0.0814	0.0498	0.0983	0.0466
ALCOHO	-0.0842	-0.2662	-0.1766	-0.3001	-0.2071	-0.2582
DOGMAT	-0.2462	-0.2504	-0.1319	-0.4048	-0.3126	-0.2400
DEFERE	-0.0022	0.1750	-0.0628	0.1204	0.2190	0.0693
TEAMOR	0.1700	0.0675	0.1711	0.1240	0.0399	0.0109
ORGANI	-0.0299	0.0635	0.0707	0.0289	0.0093	-0.0247
IMPULS	-0.0852	-0.2327	-0.0965	-0.2171	-0.1173	-0.0532
RISKTA	0.0017	-0.2406	-0.0801	-0.2674	-0.2187	-0.2026
A1	1.0000	0.2884	0.4644	0.3907	0.1925	0.1738
A2	0.2884	1.0000	0.3990	0.4926	0.4081	0.2238
A3	0.4644	0.3990	1.0000	0.3758	0.2989	0.2792
A4	0.3907	0.4926	0.3758	1.0000	0.4105	0.2603
A5	0.1925	0.4081	0.2989	0.4105	1.0000	0.3233
A6	0.1738	0.2238	0.2792	0.2603	0.3233	1.0000

Table 13

Correlations between ALAPS and NEO-PI-R Conscientiousness Facet Scales.

	C1 Competence	C2 Order	C3 Dutifulness	C4 Achievement	C5 Discipline	C6 Deliberation
CONFID	0.3108	0.0741	0.0757	0.3722	0.1395	-0.1155
SOCIAL	0.1987	0.0304	0.0153	0.2658	0.0962	-0.0942
AGGRES	0.1018	0.0378	0.0373	0.3021	0.0491	-0.1001
ORDERC	0.2176	0.6851	0.2021	0.1887	0.2790	0.2813
NEGATI	-0.2706	-0.0451	-0.0952	0.0284	-0.2207	-0.2461
AFFECT	-0.3266	-0.1133	-0.2644	-0.1810	-0.3476	-0.3114
ANXIET	-0.1840	-0.0117	-0.1200	-0.0010	-0.1464	-0.0401
DEPRES	-0.3663	-0.2187	-0.2146	-0.3251	-0.4161	-0.1580
ALCOHO	-0.0478	-0.0852	-0.1501	0.0709	-0.1049	-0.3626
DOGMAT	0.0500	0.0179	-0.0234	0.1398	-0.1347	-0.1983
DEFERE	-0.1881	0.0271	-0.0379	-0.1709	-0.1450	0.0971
TEAMOR	0.0402	-0.0472	0.0660	0.0002	0.1120	0.1064
ORGANI	0.3629	0.6777	0.2782	0.3895	0.5127	0.4362
IMPULS	-0.3629	-0.2337	-0.4076	-0.1968	-0.4634	-0.7421
RISKTA	-0.0586	-0.0378	-0.0850	0.1177	-0.0722	-0.3528
C1	1.0000	0.4004	0.5716	0.5480	0.6448	0.3989
C2	0.4004	1.0000	0.3590	0.3728	0.4883	0.3270
C3	0.5716	0.3590	1.0000	0.4870	0.6146	0.4260
C4	0.5480	0.3728	0.4870	1.0000	0.6182	0.3173
C5	0.6448	0.4883	0.6146	0.6182	1.0000	0.5029
C6	0.3989	0.3270	0.4260	0.3173	0.5029	1.0000

Table 14

Factor Solution for ALAPS and NEO-PI-R Summary Scales.

Rotated Factor Loadings

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5
N	0.836	0.116	-0.198	-0.218	-0.062
E	-0.156	0.270	0.137	0.481	0.623
O	0.028	-0.158	-0.183	0.809	0.079
A	-0.023	-0.808	0.077	0.006	0.130
C	-0.340	-0.026	0.796	0.068	0.085
CONFID	-0.430	0.675	0.079	0.214	0.164
SOCIAL	-0.141	0.284	0.036	0.275	0.777
AGGRES	-0.034	0.739	0.094	0.223	0.135
ORDERC	0.150	0.029	0.805	-0.236	0.032
NEGATI	0.615	0.497	-0.014	-0.032	-0.231
AFFECT	0.821	0.001	-0.120	0.284	0.089
ANXIET	0.765	-0.034	0.099	-0.132	0.034
DEPRES	0.724	-0.082	-0.157	-0.134	-0.236
ALCOHO	0.125	0.404	-0.267	0.062	0.325
DOGMAT	0.266	0.640	0.021	-0.294	0.042
DEFERE	0.231	-0.136	0.024	-0.631	-0.201
TEAMOR	-0.030	-0.211	-0.019	-0.016	0.780
ORGANI	-0.072	0.019	0.888	-0.047	-0.018
IMPULS	0.345	0.361	-0.479	0.344	0.157
RISKTA	-0.008	0.436	-0.158	0.509	0.067
Variance	3.495	3.060	2.559	2.150	1.976
%	17	15	13	11	10

Note: Total percentage of variance accounted for is 66%. The first 8 Eigenvalues were 4.195, 3.886, 2.462, 1.681, 1.018, 0.906, 0.881, and 0.784.

Appendix A

ALAPS Items within Scales with Proportion Keyed Responses
and Item-Total Correlations. False keyed items are denoted by
(F).

Text	new#	old#	Prop.	Item -Total

Confidence (Narcissism)

Text	new#	old#	Prop.	Item-Total
01. I am very good at just about everything.	001	1	0.69	0.41
02. I do almost everything extremely well.	016	19	0.61	0.43
03. Sometimes I act in a fairly arrogant manner.	031	73	0.55	0.41
04. I will probably become one of the very best in my career.	046	109	0.86	0.40
05. Sometimes I take advantage of others.	061	199	0.25	0.28
06. I live by my own ideas.	076	217	0.76	0.27
07. Some people think of me as conceited and egotistical.	091	235	0.31	0.52
08. I'm probably smarter than most people.	106	271	0.68	0.46
09. I have a great deal of confidence.	121	289	0.95	0.43
10. People think of me as fairly humble. (F)	136	307	0.26	0.50
11. I am modest when I speak of my accomplishments.(F)	151	325	0.17	0.26
12. I am self-conscious in groups of people.(F)	166	343	0.60	0.44
13. I wish that I had more self-confidence. (F)	181	361	0.67	0.52
14. I get embarrassed easily.(F)	196	379	0.79	0.48
15. Others seem more sure of themselves than I am.(F)	211	397	0.78	0.53
16. I think that I lack "backbone" in some situations.(F)	226	415	0.82	0.44

Socialness

Text	new#	old#	Prop.	Item-Total
01. I fit in to new groups of people easily.	002	38	0.85	0.59
02. I have many friends.	017	56	0.88	0.57
03. I need to be around people.	032	74	0.48	0.35
04. I like to flirt.	047	92	0.76	0.35
05. People see me as friendly and talkative.	062	110	0.81	0.56
06. I am charming.	077	128	0.88	0.48
07. I can make new friends easily.	092	182	0.89	0.72
08. I like to socialize with everyone at work.	107	236	0.72	0.57
09. I like parties.	122	254	0.89	0.51

10. I spend most of my time with other people.	137	272	0.72	0.64
11. I am a pretty social person.	152	290	0.88	0.75
12. I am pretty much of a loner.(F)	167	308	0.85	0.56
13. I feel uncomfortable in a lot of social situations.(F)	182	326	0.79	0.59
14. I try to keep to myself.(F)	197	344	0.81	0.55
15. I am not very talkative.(F)	212	362	0.77	0.62
16. I really feel uncomfortable at parties.(F)	227	416	0.89	0.37

Aggressiveness

01. I tend to argue with people.	003	21	0.25	0.45
02. I like to "get even" when others deserve it.	018	57	0.37	0.40
03. Others tend to be too submissive.	033	75	0.40	0.40
04. I like to stand up for myself.	048	93	0.94	0.34
05. Sometimes, I am too blunt with others.	063	147	0.52	0.57
06. Some people think that I am too pushy.	078	165	0.29	0.58
07. I have threatened others when necessary.	093	183	0.31	0.52
08. Nobody is going to walk all over me.	108	201	0.91	0.33
09. You have to stand up for yourself most of the time.	123	219	0.80	0.30
10. I am fairly assertive.	138	237	0.92	0.45
11. I am aggressive.	153	255	0.88	0.51
12. If I am annoyed by someone, I will let them know.	168	273	0.48	0.55
13. I will fight for what I want.	183	291	0.94	0.38
14. I cooperate with everyone.(F)	198	309	0.34	0.39
15. Life is too short to fight with people.(F)	213	381	0.29	0.40
16. I wish that I were more assertive.(F)	228	399	0.67	0.35

Orderliness (Compulsivity)

01. I like things to be orderly.	004	4	0.93	0.66
02. Order is important in my life.	019	22	0.88	0.65
03. Everything should be in its place.	034	58	0.75	0.69
04. I like a very clean place.	049	76	0.75	0.66
05. Clutter bothers me.	064	94	0.70	0.57
06. I am pretty neat and orderly.	079	112	0.85	0.70
07. I am tidy.	094	130	0.72	0.68
08. I like to be disciplined in my life.	109	148	0.93	0.30
09. I am a very consistent person.	124	184	0.91	0.39
10. I just like to clean.	139	202	0.22	0.42
11. I am fairly methodical.	154	220	0.87	0.29
12. Schedules keep me on track.	169	238	0.84	0.41
13. I like a lot of structure in what I do.	184	274	0.78	0.65

14.	I am perfectionistic.	199	292	0.70	0.51
15.	I am very conscientious about everything.	214	310	0.72	0.34
16.	I am pretty messy by nature.(F)	229	364	0.86	0.54

Negativity (Passive-Aggression)

01.	I can be a little negative about people.	005	5	0.73	0.48
02.	I tend to get cynical about life.	020	59	0.18	0.48
03.	I grumble about things.	035	77	0.34	0.62
04.	I can be pretty hard on other people.	050	95	0.52	0.47
05.	Others tend to get more than they deserve.	065	113	0.21	0.34
06.	Too many get ahead without working.	080	131	0.45	0.45
07.	People don't really understand me.	095	149	0.29	0.44
08.	Others tend to criticize me.	110	185	0.13	0.50
09.	I can get touchy.	125	203	0.56	0.46
10.	People just irritate me sometimes.	140	221	0.64	0.58
11.	Life can be disillusioning.	155	257	0.51	0.47
12.	I am an optimist.(F)	170	293	0.10	0.40
13.	Things always work out in the end.(F)	185	311	0.12	0.29
14.	People tell me that I am a very positive person.(F)	200	383	0.19	0.44
15.	I treat everyone nicely.(F)	215	401	0.13	0.37
16.	The world is generally a good place.(F)	230	419	0.12	0.31

Affective Lability

01.	My moods tend to vary a great deal.	006	6	0.23	0.63
02.	My moods tend to go up and down.	021	24	0.31	0.66
03.	I can be pretty emotional.	036	42	0.43	0.73
04.	I can get pretty excited when things start happening fast.	051	60	0.65	0.36
05.	At times things scare me.	066	78	0.41	0.42
06.	Sadness can strike me pretty quickly.	081	132	0.12	0.61
07.	I am an emotional person.	096	150	0.47	0.67
08.	My emotions can get the better of me.	111	168	0.22	0.63
09.	My emotions sometimes carry me away.	126	186	0.17	0.62
10.	I am emotionally more sensitive than most.	141	204	0.27	0.56
11.	Things like tests scare me.	156	222	0.16	0.34
12.	Sometimes, I wish my moods were more controlled.	171	276	0.17	0.59
13.	Nobody has ever called me "moody".(F)	186	294	0.49	0.35
14.	My emotions are rock solid.(F)	201	312	0.33	0.59
15.	I am not a very emotional person.(F)	216	330	0.51	0.60
16.	I am a very calm person.(F)	231	384	0.11	0.35

Anxiety

----

01. I am anxious much of the time.	007	7	0.23	0.53
02. I am more anxious than most people.	022	25	0.26	0.73
03. I worry about things a lot.	037	43	0.20	0.65
04. I spend too much time being anxious.	052	151	0.09	0.56
05. I wish I were as calm and cool as some of my friends.	067	169	0.22	0.51
06. I have been very tense lately.	082	205	0.08	0.51
07. The stress in my life is making me anxious.	097	223	0.06	0.52
08. I am just a worrier.	112	259	0.08	0.47
09. I worry about things long after they are over.	127	277	0.18	0.50
10. Sometimes I get so anxious I have trouble thinking.	142	295	0.07	0.52
11. Anxiety at times gets in my way.	157	313	0.16	0.51
12. I get nervous more than I should.	172	331	0.19	0.65
13. I could work better if I weren't so anxious.	187	349	0.06	0.56
14. People say that I get too nervous.	202	367	0.06	0.57
15. My nerves have gotten the better of me.	217	403	0.06	0.47
16. Being nervous is just part of me.	232	421	0.19	0.68

Depression

----

01. I feel sad a lot lately.	008	44	0.04	0.61
02. I am not sleeping well due to stress.	023	62	0.05	0.38
03. I am feeling guilty about things.	038	98	0.12	0.50
04. My energy is down.	053	116	0.07	0.53
05. I am finding it difficult to concentrate.	068	134	0.10	0.56
06. My appetite isn't what it used to be.	083	152	0.16	0.30
07. I tend to just sit and stare.	098	188	0.08	0.48
08. I feel helpless sometimes.	113	206	0.12	0.47
09. I feel pretty pessimistic about the future.	128	260	0.06	0.28
10. I didn't used to be this depressed and blue.	143	278	0.02	0.37
11. Little excites me these days.	158	332	0.07	0.35
12. My friends think that I am depressed.	173	350	0.02	0.50
13. I used to be a lot happier.	188	368	0.03	0.44
14. I wish that I were more happy than I am.	203	386	0.14	0.57
15. I used to be a happier person.	218	404	0.03	0.50
16. I find some things just very depressing.	233	422	0.19	0.45

Alcohol Abuse

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------------------------
01. I like to drink alcohol.                  009   10   0.61   0.78
02. I have drunk more than my share of        024   28   0.33   0.69
    beer.
03. Drinking is all right while you are        039  136   0.39   0.60
    young and healthy.
04. I like to drink at a favorite place.       054  154   0.33   0.54
05. When I'm not working, I like to drink      069  172   0.20   0.49
    beer.
06. There have been times when I should        084  190   0.27   0.56
    have cut down on my drinking.
07. Drinking wine is good for the soul.        099  226   0.24   0.50
08. I have done things while drunk that I      114  244   0.45   0.63
    regret.
09. I have drunk so much on occasion that      129  262   0.21   0.53
    I have passed out.
10. I worry about getting a drunk driving      144  280   0.13   0.48
    ticket.
11. I do not drink alcohol.(F)                 159  298   0.83   0.67
12. I dislike the taste of alcohol.(F)         174  316   0.79   0.66
13. I don't like to be around people who       189  352   0.83   0.58
    drink.(F)
14. Drinking is not for me.(F)                 204  370   0.70   0.77
15. Alcohol is not attractive to me.(F)        219  406   0.63   0.77
16. I could live the rest of my life never 234  424   0.24   0.50
    having another drink.(F)


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Dogmatism (Authoritarianism)
------------------------
01. I like people who are different from       010   29   0.20   0.39
    me. (F)
02. I size people up pretty quickly.           025   65   0.72   0.46
03. My way to do things is usually best.       040  119   0.57   0.43
04. I prefer to talk with people who           055  137   0.48   0.38
    pretty much agree with me.
05. I know who I like very quickly after       070  155   0.74   0.47
    meeting them.
06. I find it difficult to tolerate people 085  173   0.48   0.43
    I don't like.
07. Some people have pretty stupid             100  191   0.57   0.51
    beliefs.
08. I accept most everyone regardless of       115  209   0.17   0.43
    beliefs or ideas. (F)
09. I am always open to new ideas. (F)         130  227   0.14   0.42
10. People think of me as open-minded and      145  245   0.15   0.45
    flexible. (F)
11. Frankly, I am a little intolerant of       160  263   0.12   0.41
    other people and their ideas.
12. I have been accused of being narrow-       175  299   0.29   0.55
    minded.
13. A lot of people need help figuring         190  353   0.68   0.35
    life out.
14. I like to hear many other approaches       205  371   0.13   0.47
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	to doing things. (F)				
15.	I am open to all new approaches to accomplishing projects. (F)	220	407	0.08	0.41
16.	Too much compromise is for losers.	235	425	0.38	0.43

Deference (Submissiveness)

01.	I do what I am told.	011	12	0.93	0.36
02.	Who ever is in charge is in charge.	026	30	0.70	0.46
03.	The boss is always right.	041	48	0.09	0.31
04.	I keep my mouth shut on the job to avoid trouble.	056	66	0.28	0.52
05.	I defer to those in charge.	071	84	0.53	0.41
06.	My job is to do what is expected of me.	086	102	0.63	0.53
07.	I usually don't express my opinions to my boss.	101	120	0.18	0.40
08.	I don't usually question those in charge.	116	156	0.60	0.59
09.	I am comfortable just doing my job.	131	192	0.38	0.44
10.	I don't question leaders.	146	210	0.21	0.56
11.	It isn't my job to question others work.	161	228	0.19	0.44
12.	I concentrate only on my own job.	176	264	0.19	0.47
13.	Everyone should concentrate on their own job.	191	282	0.53	0.51
14.	I like to question authority. (F)	206	354	0.60	0.40
15.	I prefer not to be the boss.	221	372	0.08	0.39
16.	I like it when someone else takes charge.	236	390	0.20	0.39

Team Oriented

01.	It takes a team to get most things done.	012	31	0.78	0.43
02.	I prefer to work in a team.	027	67	0.84	0.62
03.	I prefer to work alone. (F)	042	103	0.72	0.74
04.	I work best alone. (F)	057	121	0.70	0.73
05.	I am most efficient working alone. (F)	072	139	0.53	0.66
06.	People I work with often get in the way. (F)	087	157	0.84	0.36
07.	Team work is always important.	102	175	0.90	0.31
08.	A team orientation at work is important	117	013	0.96	0.27
09.	I am independent in my work. (F)	132	265	0.36	0.50
10.	I like to bounce work ideas off others.	147	283	0.90	0.34
11.	I like group projects.	162	319	0.84	0.70
12.	I prefer to work with others.	177	337	0.78	0.71
13.	I like to share the work and the credit with others.	192	355	0.91	0.39
14.	My best ideas come when working with	207	391	0.71	0.69

others.

15. It takes a team to win.	222	409	0.84	0.46
16. I like to have others around when I work.	237	427	0.76	0.63

Organization
----

01. I am an organized person.	013	15	0.90	0.63
02. Others say that I organize things well.	028	33	0.89	0.52
03. Organization is one of my strengths.	043	51	0.85	0.62
04. I like to plan things out.	058	69	0.89	0.50
05. I like to have a schedule for each day.	073	87	0.60	0.50
06. I am fairly methodical about my work.	088	105	0.84	0.49
07. I like a good system to get things done.	103	123	0.94	0.38
08. I tend to lose things.(F)	118	159	0.85	0.59
09. I am a little disorganized.(F)	133	177	0.67	0.63
10. I get a little absent minded. (F)	148	195	0.61	0.47
11. I often must look for things that I have mislaid.(F)	163	303	0.79	0.52
12. I am fairly methodical day to day.	178	321	0.75	0.58
13. I have a list of things "to do" each day.	193	339	0.56	0.46
14. I have a system to get most things done.	208	357	0.81	0.60
15. I do everything as thoroughly as possible.	223	375	0.90	0.53
16. Projects should always be well coordinated.	238	411	0.93	0.35

Impulsivity
----

01. I am a little impulsive.	014	16	0.77	0.55
02. I tend to act too quickly on things sometimes.	029	34	0.44	0.65
03. I often talk before I think.	044	52	0.23	0.50
04. I have gotten in trouble for blurting things out.	059	70	0.39	0.54
05. I am a little hasty sometimes.	074	88	0.57	0.63
06. I am spontaneous.	089	124	0.72	0.55
07. I have done foolhardy things.	104	142	0.69	0.55
08. I am not a very cautious person.	119	160	0.20	0.43
09. I wish I thought things through a little better.	134	178	0.28	0.45
10. I am a little too impetuous.	149	196	0.17	0.37
11. I like to think thoroughly before acting.(F)	164	232	0.22	0.50
12. I like to be completely sure before I act. (F)	179	250	0.38	0.48

33

13. I do nothing without thinking first.(F)	194	268	0.59	0.46
14. People say that I am too impulsive.	209	286	0.11	0.48
15. I am more spontaneous than most of my friends.	224	304	0.54	0.48
16. I like to do things on the spur of the moment.	239	322	0.74	0.54

Risk Taking
----

01. I like to take risks.	015	18	0.75	0.62
02. I am pretty cautious in life.(F)	030	72	0.40	0.52
03. I am fairly wary of risky situations.(F)	045	108	0.51	0.56
04. I am unafraid of hurting myself.	060	126	0.42	0.37
05. You can't go through life afraid of danger.	075	144	0.91	0.32
06. Dangerous situations just aren't worth the risk.(F)	090	162	0.78	0.46
07. I tend to like dangerous hobbies.	105	180	0.59	0.61
08. I have placed myself in danger in the past.	120	216	0.87	0.39
09. I would like to be a skydiver.	135	234	0.76	0.59
10. I think it would be fun to be a race car driver.	150	252	0.90	0.44
11. I like to drive fast.	165	270	0.82	0.46
12. I like adventurous hobbies.	180	288	0.91	0.54
13. I would like sports like rock climbing.	195	342	0.77	0.58
14. I avoid activities with risk involved. (F)	210	360	0.90	0.52
15. I am likely to try almost anything once.	225	378	0.81	0.47
16. I'll accept some risk as long as there's the chance I'll have fun.	240	414	0.89	0.45

Appendix B

ALAPS Items in Test Format

T   F   1. I am very good at just about everything.
T   F   2. I fit in to new groups of people easily.
T   F   3. I tend to argue with people.
T   F   4. I like things to be orderly.
T   F   5. I can be a little negative about people.
T   F   6. My moods tend to vary a great deal.
T   F   7. I am anxious much of the time.
T   F   8. I feel sad a lot lately.
T   F   9. I like to drink alcohol.
T   F   10. I like people who are different from me.
T   F   11. I do what I am told.
T   F   12. It takes a team to get most things done.
T   F   13. I am an organized person.
T   F   14. I am a little impulsive.
T   F   15. I like to take risks.
T   F   16. I do almost everything extremely well.
T   F   17. I have many friends.
T   F   18. I like to "get even" when others deserve it.
T   F   19. Order is important in my life.
T   F   20. I tend to get cynical about life.
T   F   21. My moods tend to go up and down.
T   F   22. I am more anxious than most people.
T   F   23. I am not sleeping well due to stress.
T   F   24. I have drunk more than my share of beer.
T   F   25. I size people up pretty quickly.
T   F   26. Who ever is in charge is in charge.
T   F   27. I prefer to work in a team.
T   F   28. Others say that I organize things well.
T   F   29. I tend to act too quickly on things sometimes.
T   F   30. I am pretty cautious in life.
T   F   31. Sometimes I act in a fairly arrogant manner.
T   F   32. I need to be around people.
T   F   33. Others tend to be too submissive.
T   F   34. Everything should be in its place.
T   F   35. I grumble about things.
T   F   36. I can be pretty emotional.
T   F   37. I worry about things a lot.
T   F   38. I am feeling guilty about things.
T   F   39. Drinking is all right while you are young and healthy.
T   F   40. My way to do things is usually best.
T   F   41. The boss is always right.
T   F   42. I prefer to work alone.
T   F   43. Organization is one of my strengths.
T   F   44. I often talk before I think.
T   F   45. I am fairly wary of risky situations.
T   F   46. I will probably become one of the very best in my career.
T   F   47. I like to flirt.
T   F   48. I like to stand up for myself.
T   F   49. I like a very clean place.
T   F   50. I can be pretty hard on other people.

T	F	51.	I can get pretty excited when things start happening fast.
T	F	52.	I spend too much time being anxious.
T	F	53.	My energy is down.
T	F	54.	I like to drink at a favorite place.
T	F	55.	I prefer to talk with people who pretty much agree with me.
T	F	56.	I keep my mouth shut on the job to avoid trouble.
T	F	57.	I work best alone.
T	F	58.	I like to plan things out.
T	F	59.	I have gotten in trouble for blurting things out.
T	F	60.	I am unafraid of hurting myself.
T	F	61.	Sometimes I take advantage of others.
T	F	62.	People see me as friendly and talkative.
T	F	63.	Sometimes, I am too blunt with others.
T	F	64.	Clutter bothers me.
T	F	65.	Others tend to get more than they deserve.
T	F	66.	At times things scare me.
T	F	67.	I wish I were as calm and cool as some of my friends.
T	F	68.	I am finding it difficult to concentrate.
T	F	69.	When I'm not working, I like to drink beer.
T	F	70.	I know who I like very quickly after meeting them.
T	F	71.	I defer to those in charge.
T	F	72.	I am most efficient working alone.
T	F	73.	I like to have a schedule for each day.
T	F	74.	I am a little hasty sometimes.
T	F	75.	You can't go through life afraid of danger.
T	F	76.	I live by my own ideas.
T	F	77.	I am charming.
T	F	78.	Some people think that I am too pushy.
T	F	79.	I am pretty neat and orderly.
T	F	80.	Too many get ahead without working.
T	F	81.	Sadness can strike me pretty quickly.
T	F	82.	I have been very tense lately.
T	F	83.	My appetite isn't what it used to be.
T	F	84.	There have been times when I should have cut down on my drinking.
T	F	85.	I find it difficult to tolerate people I don't like.
T	F	86.	My job is to do what is expected of me.
T	F	87.	People I work with often get in the way.
T	F	88.	I am fairly methodical about my work.
T	F	89.	I am spontaneous.
T	F	90.	Dangerous situations just aren't worth the risk.
T	F	91.	Some people think of me as conceited and egotistical.
T	F	92.	I can make new friends easily.
T	F	93.	I have threatened others when necessary.
T	F	94.	I am tidy.
T	F	95.	People don't really understand me.
T	F	96.	I am an emotional person.
T	F	97.	The stress in my life is making me anxious.
T	F	98.	I tend to just sit and stare.
T	F	99.	Drinking wine is good for the soul.
T	F	100.	Some people have pretty stupid beliefs.

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T    F 101. I usually don't express my opinions to my boss.
T    F 102. Team work is always important.
T    F 103. I like a good system to get things done.
T    F 104. I have done foolhardy things.
T    F 105. I tend to like dangerous hobbies.
T    F 106. I'm probably smarter than most people.
T    F 107. I like to socialize with everyone at work.
T    F 108. Nobody is going to walk all over me.
T    F 109. I like to be disciplined in my life.
T    F 110. Others tend to criticize me.
T    F 111. My emotions can get the better of me.
T    F 112. I am just a worrier.
T    F 113. I feel helpless sometimes.
T    F 114. I have done things while drunk that I regret.
T    F 115. I accept most everyone regardless of beliefs or ideas.
T    F 116. I don't usually question those in charge.
T    F 117. A team orientation at work is important.
T    F 118. I tend to lose things.
T    F 119. I am not a very cautious person.
T    F 120. I have placed myself in danger in the past.
T    F 121. I have a great deal of confidence.
T    F 122. I like parties.
T    F 123. You have to stand up for yourself most of the time.
T    F 124. I am a very consistent person.
T    F 125. I can get touchy.
T    F 126. My emotions sometimes carry me away.
T    F 127. I worry about things long after they are over.
T    F 128. I feel pretty pessimistic about the future.
T    F 129. I have drunk so much on occasion that I have passed out.
T    F 130. I am always open to new ideas.
T    F 131. I am comfortable just doing my job.
T    F 132. I am independent in my work.
T    F 133. I am a little disorganized.
T    F 134. I wish I thought things through a little better.
T    F 135. I would like to be a skydiver.
T    F 136. People think of me as fairly humble.
T    F 137. I spend most of my time with other people.
T    F 138. I am fairly assertive.
T    F 139. I just like to clean.
T    F 140. People just irritate me sometimes.
T    F 141. I am emotionally more sensitive than most.
T    F 142. Sometimes I get so anxious I have trouble thinking.
T    F 143. I didn't used to be this depressed and blue.
T    F 144. I worry about getting a drunk driving ticket.
T    F 145. People think of me as open-minded and flexible.
T    F 146. I don't question leaders.
T    F 147. I like to bounce work ideas off others.
T    F 148. I get a little absent minded.
T    F 149. I am a little too impetuous.
T    F 150. I think it would be fun to be a race car driver.
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T   F 151. I am modest when I speak of my accomplishments.
T   F 152. I am a pretty social person.
T   F 153. I am aggressive.
T   F 154. I am fairly methodical.
T   F 155. Life can be disillusioning.
T   F 156. Things like tests scare me.
T   F 157. Anxiety at times gets in my way.
T   F 158. Little excites me these days.
T   F 159. I do not drink alcohol.
T   F 160. Frankly, I am a little intolerant of other people and their ideas.
T   F 161. It isn't my job to question others work.
T   F 162. I like group projects.
T   F 163. I often must look for things that I have mislaid.
T   F 164. I like to think thoroughly before acting.
T   F 165. I like to drive fast.
T   F 166. I am self-conscious in groups of people.
T   F 167. I am pretty much of a loner.
T   F 168. If I am annoyed by someone, I will let them know.
T   F 169. Schedules keep me on track.
T   F 170. I am an optimist.
T   F 171. Sometimes, I wish my moods were more controlled.
T   F 172. I get nervous more than I should.
T   F 173. My friends think that I am depressed.
T   F 174. I dislike the taste of alcohol.
T   F 175. I have been accused of being narrow-minded.
T   F 176. I concentrate only on my own job.
T   F 177. I prefer to work with others.
T   F 178. I am fairly methodical day to day.
T   F 179. I like to be completely sure before I act.
T   F 180. I like adventurous hobbies.
T   F 181. I wish that I had more self-confidence.
T   F 182. I feel uncomfortable in a lot of social situations.
T   F 183. I will fight for what I want.
T   F 184. I like a lot of structure in what I do.
T   F 185. Things always work out in the end.
T   F 186. Nobody has ever called me "moody".
T   F 187. I could work better if I weren't so anxious.
T   F 188. I used to be a lot happier.
T   F 189. I don't like to be around people who drink.
T   F 190. A lot of people need help figuring life out.
T   F 191. Everyone should concentrate on their own job.
T   F 192. I like to share the work and the credit with others.
T   F 193. I have a list of things "to do" each day.
T   F 194. I do nothing without thinking first.
T   F 195. I would like sports like rock climbing.
T   F 196. I get embarrassed easily.
T   F 197. I try to keep to myself.
T   F 198. I cooperate with everyone.
T   F 199. I am perfectionistic.
T   F 200. People tell me that I am a very positive person.

T   F 201. My emotions are rock solid.
T   F 202. People say that I get too nervous.
T   F 203. I wish that I were more happy than I am.
T   F 204. Drinking is not for me.
T   F 205. I like to hear many other approaches to doing things.
T   F 206. I like to question authority.
T   F 207. My best ideas come when working with others.
T   F 208. I have a system to get most things done.
T   F 209. People say that I am too impulsive.
T   F 210. I avoid activities with risk involved.
T   F 211. Others seem more sure of themselves than I am.
T   F 212. I am not very talkative.
T   F 213. Life is too short to fight with people.
T   F 214. I am very conscientious about everything.
T   F 215. I treat everyone nicely.
T   F 216. I am not a very emotional person.
T   F 217. My nerves have gotten the better of me.
T   F 218. I used to be a happier person.
T   F 219. Alcohol is not attractive to me.
T   F 220. I am open to all new approaches to accomplishing projects.
T   F 221. I prefer not to be the boss.
T   F 222. It takes a team to win.
T   F 223. I do everything as thoroughly as possible.
T   F 224. I am more spontaneous than most of my friends.
T   F 225. I am likely to try almost anything once.
T   F 226. I think that I lack "backbone" in some situations.
T   F 227. I really feel uncomfortable at parties.
T   F 228. I wish that I were more assertive.
T   F 229. I am pretty messy by nature.
T   F 230. The world is generally a good place.
T   F 231. I am a very calm person.
T   F 232. Being nervous is just part of me.
T   F 233. I find some things just very depressing.
T   F 234. I could live the rest of my life never having another drink.
T   F 235. Too much compromise is for losers.
T   F 236. I like it when someone else takes charge.
T   F 237. I like to have others around when I work.
T   F 238. Projects should always be well coordinated.
T   F 239. I like to do things on the spur of the moment.
T   F 240. I'll accept some risk as long as there's the chance I'll
               have fun.